FLTG, Incorporated

Crosby, Texas

ENSR

Natural Resource Mitigation Preliminary Wetlands Site Selection Assessment

Submitted to:

U. S. Environmental Protection Agency Region 6, the Texas Water Commission, the U. S. Department of the Interior, and the U. S. Department of Commerce

ENSR Consulting and Engineering
(Formerly ERT)

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1.0 INTRODUCTION

As part of the French Limited remediation plan, it will be necessary to mitigate impacts that may have occurred to natural resources due to past releases of chemical constituents at the site. Freshwater sloughs which surrounded the site and water bodies downstream may have incurred environmental impacts. To mitigate these potential impacts, a wetland area will be created which is tidally connected to Galveston Bay through the San Jacinto River. The new wetlands site will be 20 to 24 acres in size.

This report summarizes the preliminary site selection process used to perform the initial screening of potential sites for wetlands creation. The area examined for potential wetlands locations is adjacent to the San Jacinto River from State Highway 90 to Morgans Point, at LaPorte, Texas.

Prospective sites were selected based on land use after reviewing color infrared aerial photographs. The area of interest was then surveyed visually from a helicopter. Nine locations which appeared suitable for wetland creation were chosen as prospective sites. Figure 1 shows the location of selected sites relative to the French Limited site. Figures 2 and 3 provide topographic and watershed information for each site. Potential wetland configurations are also shown.

These nine sites were then evaluated using a set of criteria to assess factors on the relative economic or environmental desirability of a site. The criteria defined for this assessment are as follows:

1) Distance to the San Jacinto River - The distance to the San Jacinto River and/or its estuary is an important factor in the feasibility of engineering proper hydrologic considerations (tidal connections and water table depth) for establishment of a wetlands environment.

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FIGURE 1
PROSPECTIVE WETLAND SITES
RELATIVE TO THE FRENCH LIMITED SITE
FRENCH LIMITED
NATURAL RESOURCE MITIGATION
PRELIMINARY ASSESSMENT

DRAWN BY: CS	DATE: 9-27-89	PROJECT NO.: 2870-014
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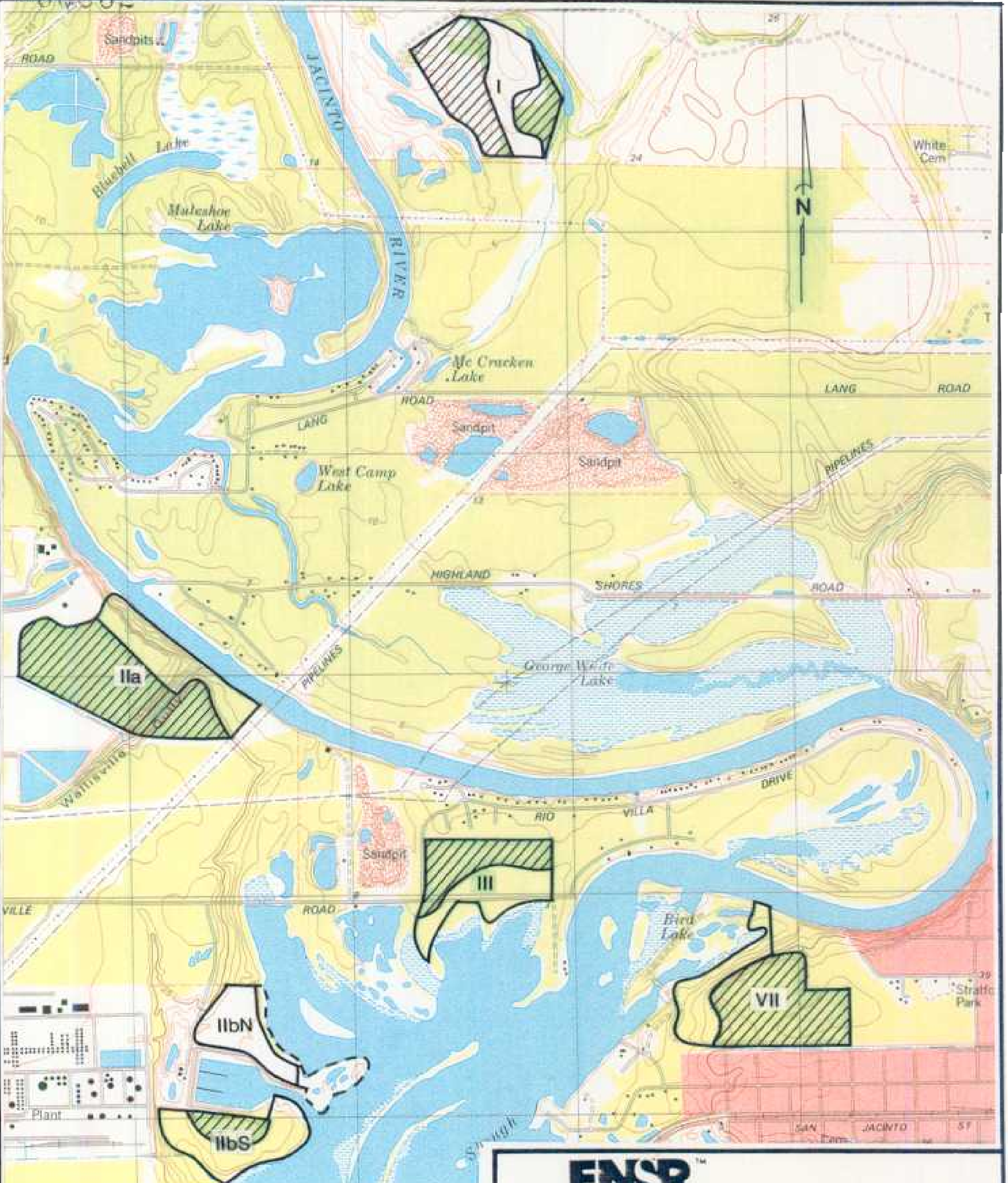
266862



NOTE: UNSHADED AREAS WITHIN SITES REPRESENT POTENTIAL WETLAND CONFIGURATIONS

0 1000 2000 3000 4000

SCALE IN FEET

REF.:USGS HIGHLANDS, TEXAS QUADRANGLE MAP, 1982

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FIGURE 2
PRELIMINARY WETLAND CREATION SITES;
SITE I, IIa, IIbN, IIbS, III, & VII
FRENCH LIMITED
NATURAL RESOURCE MITIGATION
PRELIMINARY ASSESSMENT

DRAWN BY: CS	DATE: 9-19-89	PROJECT NO.: 2870-014
CHK'D BY:	REVISED:	DWG.NO.:

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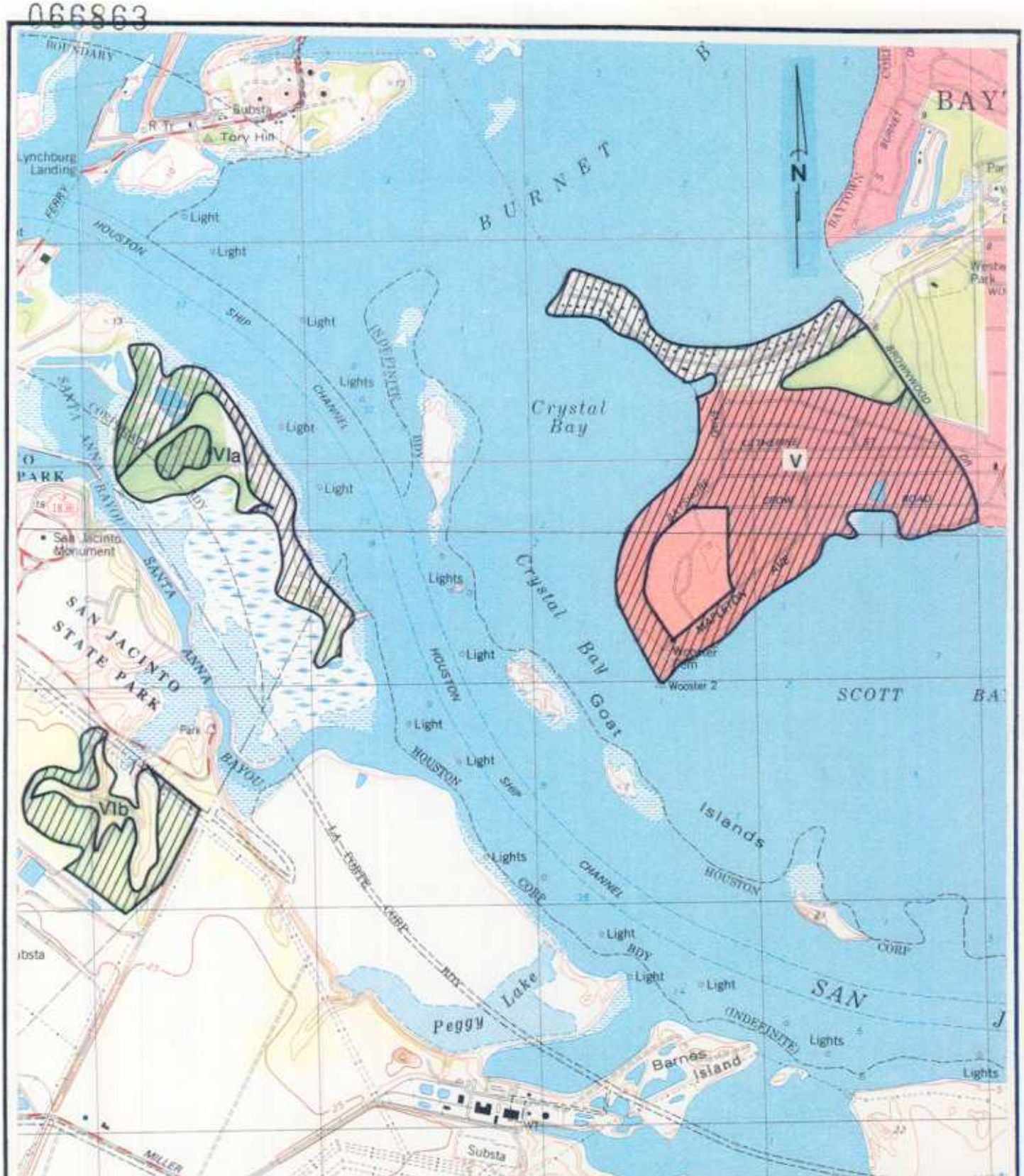

NOTE: UNSHADED AREAS WITHIN SITES REPRESENT POTENTIAL WETLAND CONFIGURATIONS

0 1000 2000 3000 4000

SCALE IN FEET

REF.:USGS LA PORTE, TEXAS QUADRANGLE MAP, 1982

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FIGURE 3

PRELIMINARY WETLAND CREATION SITES; SITE V, VIa, & VIb

FRENCH LIMITED

NATURAL RESOURCE MITIGATION

PRELIMINARY ASSESSMENT

DRAWN BY: CS	DATE: 9-14-89	PROJECT NO.:2870-014
CHK'D BY:	REVISED:	DWG.NO.:

2) Highest and Lowest Elevation - The feasibility of creating a gradual rise in topography to prevent excessive erosion, inducing marsh zonation, and removal of earthen overburden are dependent on the elevation above mean sea level (MSL).

3) Existing Vegetation and Land Use - Existing wetlands and riparian hardwood bottom land are to be avoided. a forested area is preferred less than pasture land because it is an important habitat for a wide range of organisms and disposal of removed vegetation may be environmentally unsound.

4) Adjacent Vegetation and Land Use - The adjacent land area's vegetation is also an important consideration. Adding acreage to pre-existing wetland areas creates greater critical mass for organisms. An adjacent forested area provides a corridor for woodland species which utilize wetlands for food and water. Adjacent areas which are residential or developed may reduce habitat value through disturbance by the public.

5) Soil Types - The physical and chemical properties of the soil influence the success in, and ease of, establishing a wetlands. These include factors such as soil type, pH, water-table depth, and soil permeability.

6) Total Potential Conversion Dimensions - The available size of the prospective site may allow flexibility in creating the appropriate wetland design.

7) Site Configuration - The configuration which would result if an area was selected may also play a role in the

quality of habitat. An irregularly shaped wetlands may have a higher quality than one of square dimensions of equal area.

8) Nearest Construction Access - The ease of construction access to the site is an important consideration. A suitable site may have an access point which would require extensive road building for overburden removal and would thus be less desirable. Road construction may produce significant environmental impacts.

9) Mode of Access - The mode by which access is obtained may make a site less desirable. Generally, access by land would be preferable compared to access by water. Overburden disposal sites accessible by water may be limited. However, excessive transportation distances by truck may cause adverse impacts to road surfaces and cause traffic problems.

10) Distance to Spoil Disposal Site - The distance from the wetlands site to a suitable overburden disposal area is important because of the potential traffic, noise, and economic impacts involved in trucking or barging excavated material.

11) Susceptibility to Freshwater Flooding - While flooding is an important factor in wetland habitat evolution, areas which are frequently flooded with freshwater may be too prone to scouring or excessive sedimentation for successful establishment.

12) Susceptibility to Hurricane Flooding - Hurricane flooding, while not a common event, could destroy or

inhibit the establishment of wetlands through inundation of saltwater. Water control structures such as dikes could also be damaged.

13) Current Ownership - Present ownership may influence ease of acquisition. The expediency of attaining project objectives may be dependent on the landowner(s) willingness to sell or allow the proposed modifications (i.e., City of Baytown or Texas Parks and Wildlife).

14) Distance to French Limited Site - While not a critical criteria, the proximity of the selected site may be important during construction. The French Limited site may be used for disposal of excavated materials.

15) Stability - Certain areas are susceptible to subsidence due to excessive groundwater withdrawals.

16) Environmental Flaws - The presence of threatened and/or endangered species, cultural resources, past waste disposal practices and/or other environmental factors which might reduce the desirability of a site, will be reviewed.

A site selection ranking matrix was developed which shows each criteria, each site, and the relative criteria rank (Plate 1). A relative ranking (from 1 to 9) was assigned to each criteria. If the relative value of a select criteria was the same for each site, no rank was given. For each prospective site evaluated and compared to each of the above criteria, the review and ranking of these criteria resulted in a number of sites which were selected for further evaluation and consideration. These sites will be investigated in more detail to select the final site. A final site selection report will be prepared describing the results of this second assessment.

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CRITERIA	I	IIa	IIb N
CRITERIA* RANKING — DISTANCE TO TIDAL WATER	1 4,500' VIA CREEK TO RIVER (THROUGH 1 ROAD CULVERT)	—** ADJACENT TO RIVER	— ADJACENT TO ESTUARY (BEAR LAKE)
ELEVATION	7 ~185,000 YD³ ASSUMES 5' REMOVAL HIGH – 5–10 FEET	1 ~1,000,000 YD³ ASSUMES 25 FEET REMOVAL HIGH – 25 FEET	3 ~315,000 YD³ ASSUMES 10 FEET REMOVAL HIGH – 25 FEET
EXISTING LAND USE AND VEGETATION	7 PRAIRIE OR GRAZING PASTURE WITH SCATTERED HARDWOOD TREES	3 HEAVILY WOODED PINE DECIDUOUS FOREST	6 DIKED – PRAIRIE WITH FEW TREES (TALLOW) AND SHRUBS (FALSE WILLOW) USE UNKNOWN UNTIL DISCUSSIONS WITH OWNER
ADJACENT LAND USE AND VEGETATION	8 NORTH – ACROSS ROAD IS WOODED AREA SOUTH – WOODED, VERY WET EAST – FRESHWATER WETLANDS WEST – OLD SAND BORROW PITS (INACTIVE) SAN JACINTO RIVER ADJ. TO PITS	6 NORTH – PART OF FACILITY AND RIVER SOUTH – WOODED, TRANSMISSION LINE CORRIDOR EAST – RIVER, ACROSS RIVER RESIDENTIAL WEST – PLANT FACILITY	4 NORTH – WOODED SOUTH – BARGE DOCK EAST – BAY/RIVER WEST – WETLANDS (LIMITED) PLANT FACILITY WOODS (LIMITED) WETLANDS HABITAT IS COMMON IN THE GENERAL VICINITY
SOIL TYPES***	— CLAY TO SILTY CLAY TO FINE SANDY LOAM LOW PERMEABILITY SOILS WATER TABLE 0–2.5'	— VERY FINE SANDY LOAM TO SILTY CLAY PERMEABILITY 0.06" TO 2.0"/HR WATER TABLE 1.5–2.5 FEET	— DEPRESSED AREA SANDY TO CLAY LOAM, GOOD DRAINAGE AND PERMEABILITY SLIGHTLY ELEVATED AREA CLAY TO SILTY CLAY, POOR DRAINAGE WITH LOW PERMEABILITY, WATER TABLE CONNECTED TO BAY SHALLOW 0–3'
TOTAL PROPERTY AVAILABLE	5 ~63 ACRES	7 ~90 ACRES	2 ~33 ACRES
CONFIGURATION	8 ~23 ACRES – CONFIGURED TO ADJOIN ADJACENT WETLANDS AND WOODED AREAS	2 ~25 ACRES – NARROW AND LONG PARALLEL TO RIVER – BISECTED BY CREEK	5 ~20–30 ACRES WITHIN DIKED AREA TRIANGULAR SHAPED
NEAREST ACCESS	4 PRIVATE ROAD ADJACENT TO SAND PITS. THIS ROAD RUNS EAST, CONNECTS TO CROSBY-LYNCHBURG HIGHWAY	2 MAIN PLANT ROAD AT INDUSTRIAL FACILITY	7 ROAD TO BARGE FACILITY OFF OF WALLISVILLE ROAD POSSIBLE BARGE ACCESS
MODE OF ACCESS	— ROAD	— ROAD	— ROAD OR BARGE
DISTANCE TO SPOIL SITE	— VARIABLE DEPENDING ON TIMING OF NEED TO DISPOSE OF SOIL	— VARIABLE DEPENDING ON TIMING OF NEED TO DISPOSE OF SOIL	— VARIABLE DEPENDING ON TIMING OF NEED TO DISPOSE OF SOIL
FRESHWATER FLOODING IMPACT	4 PROTECTED FROM SCOURING AND DEPOSITION OF FLOOD SEDIMENTS	1 ADJACENT TO RIVER ON HIGH ENERGY BANK – OVERBANK FLOODING COULD ERODE DIKES	6 PROTECTED FROM FLOOD SCOURING AND SEDIMENTATION
HURRICANE FLOODING IMPACT	9 STORM SURGE MAY INTRODUCE SALINE WATER	8 PROTECTED BECAUSE OUT OF BAY SYSTEM, RIVERLINE	5 IN PROTECTED COVE STORM WAVE ACTION WOULD BE MINIMAL
CURRENT OWNERSHIP	— SEVERAL PRIVATE OWNERS	— SINGLE INDUSTRIAL OWNER	— SINGLE INDUSTRIAL OWNER
DISTANCE TO FLTG SITE	8 ~3.8 MILES	9 ~3 MILES	7 ~8.4 MILES
SUBSIDENCE IMPACT	— SUBSIDENCE RATE HAS DECREASED TO APPROX. 0.2 FEET/5 YEARS	— SUBSIDENCE RATE HAS DECREASED TO APPROX. 0.2 FEET/5 YEARS	— SUBSIDENCE RATE HAS DECREASED TO APPROX. 0.2 FEET/5 YEARS
ENVIRONMENTAL FLAWS	— T & E SPECIES – LOW POTENTIAL CULTURAL RESOURCES – NO IDENTIFIED SITES PAST WASTE DISPOSAL – UNKNOWN	— T & E SPECIES – LOW POTENTIAL CULTURAL RESOURCES – NO IDENTIFIED SITES PAST WASTE DISPOSAL – UNKNOWN	— T & E SPECIES – LOW POTENTIAL CULTURAL RESOURCES – NO IDENTIFIED SITES PAST WASTE DISPOSAL – UNKNOWN

CRITERIA	IIb S	III	V
CRITERIA* RANKING — DISTANCE TO TIDAL WATER	— ADJACENT TO ESTUARY (BEAR LAKE)	— ADJACENT TO ESTUARY	— ADJACENT TO CRYSTAL BAY
ELEVATION	4 ~304,000 YD³ ASSUMES 8 FEET REMOVAL HIGH – 10 FEET	8 ~164,000 YD³ ASSUME 5 FEET REMOVAL HIGH. – 5 FEET	9 HIGH <5 FEET MINIMAL SOIL EXCAVATION REQUIRED
EXISTING LAND USE AND VEGETATION	4 HEAVY WOODS – PINE DECIDUOUS FOREST	7 DENSE SHRUBS WITH FEW TREES (FALSE WILLOW SUMPWEED AND CHINESE TALLOW) ADJACENT TO RESIDENTIAL AREA, COULD HAVE PUBLIC IMPACTING ESTABLISHMENT	5 OLD ABANDONED SUB-DIVISION WITH CONCRETE FOUNDATIONS, DRIVEWAYS AND ASPHALT ROADS. DEMOLISHED, STANDING HOUSES, FOUNDATIONS AND ROAD BASE MATERIALS REMAIN. SCRUB WOODS, TALLOW TREES.
ADJACENT LAND USE AND VEGETATION	3 NORTH – BARGE DOCK SOUTH – BAY EAST – BAY WEST – LIMITED WOODS, FACILITY	5 NORTH – WOODED AND RESIDENT. ALONG SAN JAC. RIVER SOUTH – WETLANDS AND SJR EST. EAST – RESIDENTIAL ALONG SAN JACINTO RIVER WEST – LIMITED WOODS AND SAND PITS (FACILITY)	1 WHOLE PENINSULA WAS RESIDENTIAL, SMALL SCRUB WOODS
SOIL TYPES***	— VERY FINE SANDY LOAM LOW PERMEABILITY 0.06–2.0"/HR WATER TABLE 1.5–2.5 FEET	— SANDY LOAMS TO SILTY LOAMS PERMEABLE SOILS WATER TABLE 0–5 FEET	— AREAS OF CLAY TO SILTY CLAY AND AREAS OF SILTY LOAM TO SANDY LOAM PERMEABILITY LOW TO MODERATE WATER TABLE 0–2.5 FEET
TOTAL PROPERTY AVAILABLE	1 ~31 ACRES	3 ~48 ACRES	9 ~113–340 ACRES SUBSTANTIAL AREA IS NOW INUNDATED
CONFIGURATION	3 ~24 ACRES FOLLOWS TOPOGRAPHY RECTANGULAR	7 ~20–22 ACRES CONFIGURED TO JOIN ADJACENT WETLANDS	6 SEVERAL CONFIGURATIONS POSSIBLE USING ROADS AS DIKES
NEAREST ACCESS	8 ROAD TO BARGE FACILITY OFF OF WALLISVILLE ROAD POSSIBLE BARGE ACCESS	9 WALLISVILLE ROAD – WILL REQUIRE MODIFICATION TO ROAD. CULVERTS REQUIRED TO PERMIT WATER EXCHANGE	5 SEVERAL ROADS INTO SUBDIVISION WHICH CONNECT TO BAYWAY DRIVE WHICH CONNECTS TO DECKER DRIVE TO INTERSTATE 10
MODE OF ACCESS	— ROAD OR BARGE	— ROAD	— ROAD
DISTANCE TO SPOIL SITE	— VARIABLE DEPENDING ON TIMING OF NEED TO DISPOSE OF SOIL	— VARIABLE DEPENDING ON TIMING OF NEED TO DISPOSE OF SOIL	— SOIL EXCAVATION MAY NOT BE REQUIRED REMOVAL OF HOUSING MATERIAL MAY BE REQUIRED
FRESHWATER FLOODING IMPACT	5 PROTECTED FROM FLOOD SCOURING AND SEDIMENTATION	3 NOT SUBJECT TO FLOOD SCOURING BUT SOME SEDIMENTATION	8 IN BAY SYSTEM
HURRICANE FLOODING IMPACT	2 LONG OPEN WATER EXPOSURE ON BEAR LAKE, LIMITED PROTECTED FROM STORM WAVES	4 LONG OPEN WATER EXPOSURE TO THE SOUTH STORM SURGE WAVES COULD IMPACT	1 LONG OPEN WATER IN BAY
CURRENT OWNERSHIP	— SINGLE INDUSTRIAL OWNER	— INDUSTRIAL OWNER DEVELOPMENT OWNER	— CITY OF BAYTOWN
DISTANCE TO FLTG SITE	6 ~9 MILES	5 ~9.4 MILES	3 ~16 MILES
SUBSIDENCE IMPACT	— SUBSIDENCE RATE HAS DECREASED TO APPROX. 0.2 FEET/5 YEARS	— SUBSIDENCE RATE HAS DECREASED TO APPROX. 0.2 FEET/5 YEARS	— SUBSIDENCE RATE HAS DECREASED TO APPROX. 0.2 FEET/5 YEARS (AREAS WITHIN SUBDIVISION NOW INUNDATED)
ENVIRONMENTAL FLAWS	— T & E SPECIES – LOW POTENTIAL CULTURAL RESOURCES – NO IDENTIFIED SITES PAST WASTE DISPOSAL – UNKNOWN	— T & E SPECIES – LOW POTENTIAL CULTURAL RESOURCES – NO IDENTIFIED SITES PAST WASTE DISPOSAL – UNKNOWN	1 T & E SPECIES – LOW POTENTIAL CULTURAL RESOURCES – SITES IDENTIFIED PAST WASTE DISPOSAL – UNKNOWN QUANTITIES OF HOUSEHOLD AND SEWAGE WASTES

CRITERIA	VI a	VI b	VII
CRITERIA* RANKING — DISTANCE TO TIDAL WATER	— ADJACENT TO SANTA ANNA BAYOU WHICH FLOWS INTO CRYSTAL BAY AND THE SHIP CHANNEL	— ADJACENT TO TIDAL INFLOW FROM SANTA ANNA BAYOU	— ADJACENT TO BIRD LAKE WHICH LIES IN THE ESTUARY OF THE RIVER
ELEVATION	5 ~232,000 YD³ ASSUMES 7 FEET REMOVAL HIGH – 10 FEET	6 ~2,718,000 YD³ ASSUMES 7 FEET REMOVAL HIGH – 20 FEET	2 ~555,000 YD³ ASSUMES 12 FEET REMOVAL HIGH – 25 FEET
EXISTING LAND USE AND VEGETATION	9 SHRUBS AND GRASSES ADJACENT TO WETLAND AREA. SUMPWEED, CHINESE TALLOW, FALSE WILLOW INTENDED USE UNKNOWN	2 WOODED WITH HARDWOOD SPECIES INTENDED USE UNKNOWN	1 HEAVY WOODED WITH PINE /HARDWOODS. PROVIDES SOME RECREATION TO NEARBY RESIDENTS AS EVIDENCED BY TRAILS
ADJACENT LAND USE AND VEGETATION	9 CONTIGUOUS TO LARGE SALT MARSH NORTH – BAY SOUTH – SANTA ANNA BAYOU SALT MARSH EAST – BAY WEST – SAN JACINTO STATE PARK	7 ADJACENT TO TIDAL INFLOW NORTH – SAN JACINTO STATE PARK SOUTH – FACILITY AND PASTURE EAST – WOODS, SPOIL AREA, BAY WEST – WOODS, PASTURE, FACILITY	2 NORTH – SAN JACINTO RIVER SOUTH – RESIDENTIAL EAST – RESIDENTIAL WEST – ESTUARY AND RIVER
SOIL TYPES***	— CLAY PERMEABILITY <.06"/HR WATER TABLE 6.6 TO 9 FEET	— CLAY LOW PERMEABILITY .06"–2.0"/HR WATER TABLE 0–2.0 FEET	— CLAY TO SILTY CLAY SLIGHTLY ACID 4.8"–7.8' WATER TABLE 0–2.0 FEET
TOTAL PROPERTY AVAILABLE	8 ~100 ACRES	6 ~80 ACRES	4 ~50 ACRES
CONFIGURATION	9 ~25 ACRES WITH ISLAND, FOLLOWS TOPOGRAPHY AVOIDING EXISTING WETLANDS. DIKES PRESENT	4 ~23 ACRES FOLLOWS CONTOURS UPLAND FROM EXISTING WETLAND AREA	1 ~21 ACRES ON STEEP SLOPE FOLLOWING TOPOGRAPHY
NEAREST ACCESS	6 DIRT ROAD OFF OF LYNCHBURG FERRY ROAD POSSIBLE BARGE ACCESS	3 SAN JACINTO PARK ROAD MUST GAIN ACCESS ACROSS TRANSMISSION CORRIDOR	1 RESIDENTIAL STREET THROUGH HIGHLAND WOODS SUBDIVISION OR SAN JACINTO RIVER
MODE OF ACCESS	— ROAD OR BARGE	— ROAD	1 ROAD OR BARGE
DISTANCE TO SPOIL SITE	— VARIABLE DEPENDING ON TIMING OF NEED TO DISPOSE OF SOIL	— VARIABLE DEPENDING ON TIMING OF NEED TO DISPOSE OF SOIL	— VARIABLE DEPENDING ON TIMING OF NEED TO DISPOSE OF SOIL
FRESHWATER FLOODING IMPACT	9 IN BAY SYSTEM	7 IN BAY SYSTEM LIMITED DRAINAGE AREA	2 HIGH ENERGY BANK OF RIVER – PREDISPOSED TO SCOURING
HURRICANE FLOODING IMPACT	3 PRESENTLY EXISTING DIKES –UPGRADING WOULD PROTECT AGAINST STORM WAVES EROSION FROM SHIP CHANNEL	6 PROTECTED INLET	7 WELL PROTECTED FROM STORM SURGE WAVES
CURRENT OWNERSHIP	— TEXAS PARKS AND WILDLIFE DEPARTMENT AND PRIVATE OWNERS	— TEXAS PARKS AND WILDLIFE DEPARTMENT	— SEVERAL PRIVATE OWNERS
DISTANCE TO FLTG SITE	1 ~22 MILES	2 ~22 MILES	4 ~10 MILES
SUBSIDENCE IMPACT	— SUBSIDENCE RATE HAS DECREASED TO APPROX. 0.2 FEET/5 YEARS	— SUBSIDENCE RATE HAS DECREASED TO APPROX. 0.2 FEET/5 YEARS	— SUBSIDENCE RATE HAS DECREASED TO APPROX. 0.2 FEET/5 YEARS
ENVIRONMENTAL FLAWS	2 T & E SPECIES – LOW POTENTIAL CULTURAL RESOURCES – SITES IDENTIFIED PAST WASTE DISPOSAL – UNKNOWN	— T & E SPECIES – LOW POTENTIAL CULTURAL RESOURCES – NO IDENTIFIED SITES PAST WASTE DISPOSAL – UNKNOWN	— T & E SPECIES – LOW POTENTIAL CULTURAL RESOURCES – NO IDENTIFIED SITES PAST WASTE DISPOSAL – UNKNOWN

*RANKING FROM 1–9, WITH 9 BEING THE MOST PREFERRED.
** – REPRESENTS CRITERIA OF EQUAL OR NO VALUE RANK
*** SOILS RANKING WILL DEPEND ON WHAT PLANT SPECIES ARE PLANTED AND THE SALINITY AND QUALITY OF THE WATER

PLATE 1

PRELIMINARY WETLANDS SITE ASSESSMENT MATRIX
FRENCH LIMITED PROJECT

2.0 INDIVIDUAL SITE ASSESSMENTS

Each site was evaluated for 16 site selection criteria. These criteria were developed to define factors which would facilitate or deter development of wetlands at a particular location. Each site is identified by Roman numerals and, in some cases, by additional letters. Alternate sites selected were eliminated initially based on limited size (Site IV, which is not described). The following subsections briefly describe each of the criteria for each site.

2.1 Site I

1. Distance to the San Jacinto River

The site would be hydraulically connected to the San Jacinto River by a distance of approximately 4,500 feet. Currently, the intermittent creek which connects the site to the river flows through a single road culvert on a private road. Figures 4 and 5 show the site and its surroundings.

2. Elevation

The topographic high is approximately 5 feet above mean sea level (MSL), as shown in Figure 2. Assuming an average of 5 feet of overburden and a configured area of 23 acres, a volume of approximately 185,533 cubic yards would require excavation.

3. Existing Land Use and Vegetation

Currently, the site is a pasture with scattered hardwood trees. While there is an associated value with this habitat type, its value is lower than, for example, bottomland hardwoods or pine/deciduous forest.

4. Adjacent Land Use and Vegetation

The site lies adjacent to woods, pasture, inactive borrow pits, and freshwater wetlands. North and south of the site are

FIGURE 4
SITE I
FRENCH LIMITED
NATIONAL RESOURCE MITIGATION
PRELIMINARY SITE SELECTION ASSESSMENT

VIEW LOOKING SOUTH

FIGURE 5
SITE I
FRENCH LIMITED
NATIONAL RESOURCE MITIGATION
PRELIMINARY SITE SELECTION ASSESSMENT

VIEW LOOKING EAST

wooded areas which appear to be established in very wet soils. Directly east is a freshwater wetlands which appears to be dominated by bald cypress (Taxodium distichum). To the east of the wetland area lies a large pasture. Inactive borrow pits are located just west of the site.

5. Soils

The soils in the configured area vary from clay to sandy clay to a fine sandy loam. The predominant soil type, Atasco series, is a fine sandy clay with silt. The water table is generally perched and 1.5 to 2.5 feet in depth. The permeability of this soil ranges from 0.06 to 2.0 inches per hour. The pH range is from 4.5 to 6.5.

6. Total Property Area

The total property area within which a wetland area can be configured is approximately 63 acres. This does not represent the area which may require acquisition to adequately protect and maintain the wetlands created and its hydrologic requirements.

7. Final Configuration

The potential final configuration shown in Figure 2 is approximately 23 acres in size. This configuration would expand existing wetlands, creating a greater area of wetland habitat. The final configuration may change in proportions and size depending on additional information.

8. Nearest Access

Presently a private road is the nearest access to the site. This road connects to the Crosby-Lynchburg Road (Highway 2100).

9. Mode of Access

The mode of access would be via the private road.

10. Distance to Soil Disposal Site

Arrangements for disposal of excavated soils are usually determined at the time of construction. As overburden is removed, it is transported directly to a construction site requiring fill material.

11. Distance to the FLTG Site

The approximate distance to the French Limited site is 3.8 miles.

12. Hurricane Flooding Impacts

The storm surge associated with a hurricane event may introduce saline waters which might affect the site. Storm waves would not affect the site because of its distance from open water.

13. Freshwater Flooding Impacts

During a flood event, the site area would become inundated; however, the site appears to be protected from scouring and deposition of floodwater sediments.

14. Stability

While subsidence has been a problem in the past, recent data suggest that the rate of subsidence has decreased to approximately 0.2 feet per 5 years in the eastern portions of Harris County.

15. Ownership

Owners are multiple with numerous deed instruments.

16. Environmental

No known threatened or endangered species, cultural resources, or contaminants from past waste disposal practices are present at this time.

2.2 Site IIa

1. Distance to the San Jacinto River

Site IIa lies on the west bank directly adjacent to the San Jacinto River. Figures 6 and 7 show the site and its surroundings.

2. Elevation

The topographic high is approximately 25 feet above MSL, as shown in Figure 2. The site is bisected by Wallisville Gully which receives runoff from an industrial facility west of the site. This creek would feed the created wetlands. The rise in elevation to 25 feet is rather sharp on the bank of the river and creek. Assuming an average of 25 feet of overburden and a configured area of 25 acres, a volume of approximately 1,008,333 cubic yards would require excavation.

3. Existing Land Use and Vegetation

Currently, the site is a pine/deciduous forest. This habitat type has considerable value to wildlife species. The area is traversed by a pipeline. The planned use of the site is unknown at this time.

4. Adjacent Land Use and Vegetation

The site lies adjacent to the river, woods, and a petrochemical facility. North of the site lies part of the plant facility and a golf course. South of the site are wooded areas and an electrical power transmission corridor. Directly to the east is the river. Across the river is a residential area. To the west of the site is an industrial facility.

5. Soils

The predominant soil type in the configured area is the Aldine series which is a very fine sandy loam to silty clay. The water

FIGURE 6
SITE IIa
FRENCH LIMITED
NATIONAL RESOURCE MITIGATION
PRELIMINARY SITE SELECTION ASSESSMENT

VIEW LOOKING WEST

FIGURE 7
SITE IIa
FRENCH LIMITED
NATIONAL RESOURCE MITIGATION
PRELIMINARY SITE SELECTION ASSESSMENT

CLOSER VIEW

table for this soil type is generally perched and 1.5 to 2.5 feet in depth. The permeability of this soil ranges from 0.06 to 2.0 inches per hour. The pH range is from 4.5 to 6.5.

6. Total Property Area

The total property area within which a wetland area can be configured is approximately 90 acres.

7. Final Configuration

The potential final configuration shown in Figure 2 is approximately 25 acres in size. The final configuration may change in proportions and size depending on additional information. Large dikes would be required to deter scouring from river flood events.

8. Nearest Access

The most feasible access would be via the main plant road leading into the industrial facility to the west. This road connects to Sheldon Road.

9. Mode of Access

The mode of access would be via the industrial facility's road.

10. Distance to Soil Disposal Site

Arrangements for disposal of excavated soils are usually determined at the time of construction. As overburden is removed, it is transported directly to a construction site requiring fill material.

11. Distance to the FLTG Site

The approximate distance to the French Limited site is 3 miles.

12. Hurricane Flooding Impacts

The storm surge associated with a hurricane event may introduce saline waters which might affect the site. Storm waves would not affect the site because of its distance from open water.

13. Freshwater Flooding Impacts

During a flood event, the site area may become inundated. Because the site lies on the high energy bank of the river, the potential for scouring is high. Dikes may require rebuilding after a flood event.

14. Stability

While subsidence has been a problem in the past, recent data suggest that the rate of subsidence has decreased to approximately 0.2 feet per 5 years in the eastern portions of Harris County. Prior data indicate that subsidence was approximately 0.4 feet per year in certain areas.

15. Ownership

The site is presently owned by an industrial company.

16. Environmental

At this time, no known threatened or endangered species, cultural resources, or contaminants from past waste disposal practices are present at the site.

2.3 Site IIbN

1. Distance to the San Jacinto River

Site IIbN lies on the western edge of the San Jacinto River estuary adjacent to Bear Lake. Figures 8 and 9 show the site and its surroundings.

FIGURE 8
SITE IIb N & S
FRENCH LIMITED
NATIONAL RESOURCE MITIGATION
PRELIMINARY SITE SELECTION ASSESSMENT

VIEW LOOKING WEST

b 999

FIGURE 9
SITE IIbN
FRENCH LIMITED
NATURAL RESOURCE MITIGATION
PRELIMINARY SITE SELECTION ASSESSMENT

VIEW LOOKING WEST

2. Elevation

The topographic high for the site is 25 feet (MSL). However, this elevation exists only in the very northeast edge of the site (Figure 2). The average elevation within the diked area appears to be between 5 and 10 feet. Assuming an average of 10 feet of overburden for 20 acres, a volume of approximately 322,666 cubic yards would require excavation.

3. Existing Land Use and Vegetation

The site is a diked area which has reverted to coastal prairie vegetation. Dominant species appear to be the false-willow (Bacchris sp.) and the Chinese tallow tree (Sapium sebiferum). Wetter areas are dominated by the sumpweed (Iva fructescens). The intended use of the site is presently unknown.

4. Adjacent Land Use and Vegetation

To the north of the site lies a wooded area with small ephemeral ponds. A barge loading and unloading facility lies just to the south. The waters of Bear Lake and the San Jacinto River are adjacent to the east. Just west of the site is a regularly mowed area, limited woods, and an industrial facility.

5. Soils

Two soil types at the site, Kaman and Wockley, are comprised mostly of clay and fine-sandy-to-clayey loam, respectively. The sandier soils exist in the depressed area. The water table for these soils ranges from 0 to 2.5 feet in depth and can be perched or apparent. Permeability is less than 0.6 and 0.2 to 6.0 inches per hour for the clay and sand, respectively. pH ranges for both soils are 5.1 to 7.8 with the sandier soil being slightly more acidic.

6. Total Property Area

The total property available for wetland configuration is approximately 33 acres.

7. Final Configuration

Configuration just within the diked area is approximately 20 acres (Figure 2). The addition of the area outside the diked areas and the roads is approximately 33 acres (dashed line in Figure 2).

8. Nearest Access

The road leading to the barge facility, which is connected to Wallisville Road, is the nearest access road to the site. The nearest exit from Wallisville Road is Sheldon Road.

9. Mode of Access

The mode of access would be via the above mentioned road, or possibly by barge.

10. Distance to Soil Disposal Site

Arrangements for disposal of excavated soils are usually determined at the time of construction. As overburden is removed, it is transported directly to a construction site requiring fill material.

11. Distance to the FLTG Site

The distance to the French Limited site via Wallisville Road is approximately 8.4 miles.

12. Hurricane Flooding Impacts

Impacts from hurricanes would likely be limited to inundation. The site would be protected from wave action by land just south of the barge facility.

13. Freshwater Flooding Impacts

The impact of freshwater flooding would be low due to site's location in the estuary.

14. Stability

While subsidence has been a problem in the past, recent data suggest that the rate of subsidence has decreased to approximately 0.2 feet per 5 years in the eastern portions of Harris County. Prior data indicate that subsidence was approximately 0.4 feet per year in certain areas.

15. Ownership

The present owner is an industrial company.

16. Environmental

At this time, no known threatened or endangered species, cultural resources, or contaminants from past waste disposal practices are present at the site.

2.4 Site IIbS

1. Distance to the San Jacinto River

Site IIbS lies on the western edge of the San Jacinto River estuary adjacent to Bear Lake. Figures 8 and 10 show the site and its surroundings.

2. Elevation

The topographic high for this site is 10 feet. Assuming an average of 8 feet of overburden, a volume of 304,526 cubic feet of soil would require excavation.

3. Existing Land Use and Vegetation

The site is heavily wooded with pine and deciduous trees. Construction of a wetland area would require removal of these trees.

FIGURE 10
SITE IIbS
FRENCH LIMITED
NATURAL RESOURCE MITIGATION
PRELIMINARY SITE SELECTION ASSESSMENT

VIEW LOOKING NORTH

4. Adjacent Land Use and Vegetation

To the north of the site is a barge facility. Bear Lake lies to the south and east of the selected area. To the southwest of the site are wooded areas. Directly west is an industrial facility.

5. Soils

The predominant soil type in the configured area is the Aldine series, which is a very fine sandy loam to silty clay. The water table for this soil type is generally perched and 1.5 to 2.5 feet in depth. The permeability of this soil ranges from 0.06 to 2.0 inches per hour. The pH range is from 4.5 to 6.5.

6. Total Property Area

The total area available for configuring a wetland is approximately 31 acres.

7. Final Configuration

A configuration, as seen in Figure 2, is 24 acres in size. The shape follows topographic contours and lies adjacent to tidal waters on its eastern perimeter. The western portion of the site would be inland with a creek directly on its southern edge.

8. Nearest Access

The road leading to the barge facility, which is connected to Wallisville Road, is the nearest access road to the site. The nearest exit from Wallisville Road is Sheldon Road.

9. Mode of Access

The mode of access would be via the above mentioned road.

10. Distance to Spoil Disposal Site

Arrangements for disposal of excavated soils are usually determined at the time of construction. As overburden is removed,

it is transported directly to a construction site requiring fill material.

11. Distance to the FLTG Site

The distance to the French Limited site via Wallisville Road is approximately 9 miles.

12. Hurricane Flooding Impacts

The impact from hurricane events may be high due to the long open stretch of water. Storm waves could cause damage to dikes.

13. Freshwater Flooding Impacts

While the site may be inundated with freshwater, it is protected from scouring and deposition because of its location in the estuary.

14. Stability

While subsidence has been a problem in the past, recent data suggest that the rate of subsidence has decreased to approximately 0.2 feet per 5 years in the eastern portions of Harris County. Prior data indicate that subsidence was approximately 0.4 feet per year in certain areas.

15. Ownership

The present owner is an industrial company.

16. Environmental

At this time, no known threatened or endangered species, cultural resources, or contaminants from past waste disposal practices are present at the site.

2.5 Site III

1. Distance to the San Jacinto River

Site III lies adjacent to a tidal inlet of the San Jacinto River estuary. Figures 11 and 12 show the site and its surroundings.

2. Elevation

The topographic high for this site is 5 feet (MSL) (Figure 2). Assuming 5 feet of overburden over approximately 20 acres, an estimated volume of 164,609 cubic yards of soil would require excavation.

3. Existing Land Use and Vegetation

The site currently is covered by shrubs and small trees, false-willow (Bacchris sp.) and Chinese tallow (Sapium sebiferum). The wetter areas of the site are dominated by sumpweed (Iva fructescens). The area appears to have been previously inundated with saline water as evidenced by a number of small dead trees. The use of this land remains questionable until more information is obtained from the present owner(s).

4. Adjacent Land Use and Vegetation

A residential area (Rio Villa) lies just north of the site along the bank of the San Jacinto River. South of the site is a marginal wetland area dominated by sumpweed (Iva fructescens) and the San Jacinto River estuary. To the west lies a small wooded area (pine/deciduous) adjacent to borrow pits. Additional residential area exists to the east of the site along the river.

5. Soils

The predominant soil present is the Hatliff sandy loam. The permeability of the soil ranges from 2.0 to 6.0 inches per hour. The water table is 0 to 2 feet in depth. The pH range is from 5.1 to 7.3.

FIGURE 11
SITE III
FRENCH LIMITED
NATURAL RESOURCE MITIGATION
PRELIMINARY SITE SELECTION ASSESSMENT

SAN JACINTO RIVER TO THE NORTH

FIGURE 12
SITE III
FRENCH LIMITED
NATIONAL RESOURCE MITIGATION
PRELIMINARY SITE SELECTION ASSESSMENT

CLOSER VIEW WITH WETLANDS IN BACKGROUND

6. Total Property Area

The total acreage available for wetlands configuration is 48 acres.

7. Final Configuration

Figure 2 shows a potential wetlands configuration. This configuration would be 20 to 22 acres in size and be contiguous to an existing wetland area.

8. Nearest Access

Wallisville Road would be the nearest access road to the site. The nearest exit from Wallisville Road is Sheldon Road.

9. Mode of Access

The mode of access would be via the above mentioned road.

10. Distance to Soil Disposal Site

Arrangements for disposal of excavated soils are usually determined at the time of construction. As overburden is removed, it is transported directly to a construction site requiring fill material.

11. Distance to the FLTG Site

The distance to the French Limited site via Wallisville Road is approximately 9.4 miles.

12. Hurricane Flooding Impacts

The site would be inundated by storm surges. Storm wave action may be problematic due to the open stretch of water to the south.

13. Freshwater Flooding Impacts

While the site might be inundated with freshwater, it is protected from scouring because of the wooded areas just north of the site.

14. Stability

While subsidence has been a problem in the past, recent data suggest that the rate of subsidence has decreased to approximately 0.2 feet per 5 years in the eastern portions of Harris County. Prior data indicate that subsidence was approximately 0.4 feet per year in certain areas.

15. Ownership

The site is presently owned by multiple private owners.

16. Environmental

At this time, no known threatened or endangered species, cultural resources, or contaminants from past waste disposal practices are present at the site.

2.6 Site V

1. Distance to the San Jacinto River

Site V is a peninsula extending into the San Jacinto River estuary. Figures 13, 14, and 15 show the site and its surroundings.

2. Elevation

The elevation at this site ranges from the high water mark to 10 feet (MSL). This area has experienced substantial subsidence in the past and elevations may only range to 5 feet (USGS Map, 1982). It is expected that a minimal volume of soil would require removal. Any soil excavated could be used on site to raise areas adjacent to the created wetlands.

3. Existing Land Use and Vegetation

This site was once a subdivision of the city of Baytown. Present usage is for recreation, particularly fishing. There are freshwater to brackish ponds present which are used by wildlife, particularly shorebirds and wading birds. Vegetation is limited

FIGURE 13
SITE V
FRENCH LIMITED
NATURAL RESOURCE MITIGATION
PRELIMINARY SITE SELECTION ASSESSMENT

VIEW LOOKING TO THE SOUTH

FIGURE 14
SITE V
FRENCH LIMITED
NATURAL RESOURCE MITIGATION
PRELIMINARY SITE SELECTION ASSESSMENT

VIEW IS TO THE NORTHEAST

FIGURE 15
SITE V
FRENCH LIMITED
NATURAL RESOURCE MITIGATION
PRELIMINARY SITE SELECTION ASSESSMENT

PENINSULAR AREA

to domestic plantings, now feral, false-willow shrubs (Bacchris sp.), Chinese tallow (Sapium sebiferum), and scattered live oaks.

4. Adjacent Land Use and Vegetation

The peninsula is surrounded on three sides by tidal waters. Burnett Bay lies to the north, Crystal Bay to the west, and Scott Bay to the south. To the east lies a residential area.

5. Soils

Due to the large area of interest, there are 7 soil types present. The predominant soil is the Aldine series which is a very fine sandy loam to silty clay. The water table for this soil type is generally perched and 1.5 to 2.5 feet in depth. The permeability of this soil ranges from 0.06 to 2.0 inches per hour. The pH range is from 4.5 to 6.5.

6. Total Property Area

The total property available is approximately 340 acres. Substantial acreage (approximately 100 acres) is now inundated.

7. Final Configuration

Many possible configurations exist. Existing roads could serve as dikes with the created wetland areas existing in the housing tract areas (Figure 3).

8. Nearest Access

Access to the site would be by roads into the subdivision. These roads connect to Decker Drive in Baytown.

9. Mode of Access

Access would be by road.

10. Distance to Soil Disposal Site

Distance to a disposal site for demolished houses is estimated to be 15 miles.

11. Distance to the FLTG Site

Distance to the French Site is approximately 16 miles, via Interstate 10, to Sheldon Road, to High State Highway 90.

12. Hurricane Flooding Impacts

This area may be significantly affected by hurricane events. An established breakwater would limit the impacts from storm waves but storm surge flooding would definitely occur.

13. Freshwater Flooding Impacts

Impacts would be limited due to the site's remoteness from the San Jacinto River.

14. Stability

While subsidence has been a problem in the past, recent data suggest that the rate of subsidence has decreased to approximately 0.2 feet per 5 years in the eastern portions of Harris County. Prior data indicate that subsidence was approximately 0.4 feet per year in certain areas.

15. Ownership

The City of Baytown has acquired ownership and may have plans to build a park on the peninsula.

16. Environmental

Threatened or endangered species are unlikely to occur in the area of interest. The remains of the demolished houses may be of hazard to wildlife through such media as broken glass and household chemicals. Contaminants from sewer lines or septic systems may also impact wildlife species which would utilize wetland habitat. Several known archeological sites occur along major portions of the shoreline in this area.

2.7 Site VIa

1. Distance to the San Jacinto River

Site VIa lies adjacent to Santa Anna Bayou, which flows into the San Jacinto River estuarine area. Figures 16 and 17 show the site and its surroundings.

2. Elevation

The topographic high for this site is approximately 10 feet (MSL). Assuming 7 feet of overburden over approximately 25 acres, an estimated volume of 282,333 cubic yards of soil would require excavation.

3. Existing Land Use and Vegetation

The area is appears to be an old soil disposal area. Dominant plant species are the false willow (Bacchris sp.), chines tallow (Sapium sebiferum), and sumpweed (Iva fructescens). The intended use of this land remains questionable until more information is obtained from the present owner(s).

4. Adjacent Land Use and Vegetation

To the north of the site is the San Jacinto River and Burnett Bay. South and southwest of the site lies Santa Anna Bayou and a wetland area dominated by sumpweed. East of the site is the San Jacinto River and Crystal Bay. Directly to the west is the San Jacinto State Park.

5. Soils

The soil type present at this location is the Ijam series, a clay with some silt. The permeability is low, less than 0.06 inches per hour. The pH range is 6.6 to 9.0. The water table is 0 to 3 feet in depth.

FIGURE 16
SITE VIa
FRENCH LIMITED
NATURAL RESOURCE MITIGATION
PRELIMINARY SITE SELECTION ASSESSMENT

VIEW LOOKING TO THE SOUTHEAST

FIGURE 17
SITE VIa
FRENCH LIMITED
NATURAL RESOURCE MITIGATION
PRELIMINARY SITE SELECTION ASSESSMENT

SAN JACINTO MONUMENT IN THE FOREGROUND

6. Total Property Area

Available acreage for wetland configuration is approximately 100 acres.

7. Final Configuration

The potential configuration shown in Figure 3 would be on the southwest side of the site and expand the existing wetland area. The size would be approximately 23 acres in size.

8. Nearest Access

Nearest access would be an unimproved road which runs off of Battleground Road. For construction access, this road connects to Highway 225.

9. Mode of Access

The mode of access would be by road although barge access may be possible from the northeast side of the site.

10. Distance to Soil Disposal Site

Soils may be used on site. If disposal of removed soils is required, the timing of construction will determine disposition.

11. Distance to the FLTG Site

The approximate distance to the French Limited site is 21 miles.

12. Hurricane Flooding Impacts

While flooding would be likely, the site is protected from wave action by existing shallows and the upland areas of the state park. Erosion from wave action due to shipping traffic in the Houston Ship Channel may be severe. Some spoil islands have disappeared from this type of erosion.

13. Freshwater Flooding Impacts

Freshwater flooding impacts would be limited due to the sites's location in the bay system of the San Jacinto River.

14. Stability

While subsidence has been a problem in the past, recent data suggest that the rate of subsidence has decreased to approximately 0.2 feet per 5 years in the eastern portions of Harris County. Prior data indicate that subsidence was approximately 0.4 feet per year in certain areas.

15. Ownership

The Texas Parks and Wildlife Department owns most of the site area. A small portion (approximately 30 acres) may be owned by a private individual.

16. Environmental

While the presence of threatened or endangered species and contaminants from past waste disposal practices is unlikely, the potential for nearby cultural resources is significant. The site is very near, if not within, the area where the Battle of San Jacinto took place.

2.8 Site VIb

1. Distance to the San Jacinto River

Site VIb lies adjacent to a tidal inlet of Santa Anna Bayou which flows into the Houston Ship Channel and Crystal Bay. Figures 18 and 19 show the site and its surroundings.

2. Elevation

The topographic high for this site is approximately 20 feet MSL. Assuming 15 feet of overburden over approximately 20 acres, an estimated volume of 278,300 cubic yards of soil would require excavation.

FIGURE 18
SITE VIb
FRENCH LIMITED
NATURAL RESOURCE MITIGATION
PRELIMINARY SITE SELECTION ASSESSMENT

VIEW LOOKING TO THE NORTHEAST

FIGURE 19
SITE VIb
FRENCH LIMITED
NATURAL RESOURCE MITIGATION
PRELIMINARY SITE SELECTION ASSESSMENT

CLOSER VIEW OF TOTAL INTERFACE

3. Existing Land Use and Vegetation

The potential wetland area is covered by hardwoods. Dominant species likely include water oak, laurel oak, and red oak. Wetland areas are dominated by sumpweed (Iva fructescens). The use of this land remains questionable until more information is obtained from the present owner.

4. Adjacent Land Use and Vegetation

To the north of the site lies San Jacinto State Park and Santa Anna Bayou. South of the area lie woods and an industrial facility. East of the area are some woods and industrial land. To the west are woods and industrial lands.

5. Soils

The predominant soil is Lake Charles clay. The permeability of this clay is low, ranging from 0.06 to 2.0 inches per hour. The water table depth is from 0 to 2 feet. The pH of the soil ranges from 6.1 to 8.4.

6. Total Property Area

Approximately 80 acres are available for configuring a wetlands area.

7. Final Configuration

The potential configuration of the wetlands area follows the topographic contours, as shown in Figure 3.

8. Nearest Access

The nearest access is by Park Road 1836. This road connects to Battleground Road (136) which connects to Highway 225.

9. Mode of Access

The mode of access is by the above mentioned roads.

10. Distance to Spoil Disposal Site

Disposal of excavated soils is depends on the timing of construction.

11. Distance to the FLTG Site

The approximate distance to the French Limited site is 22 miles.

12. Hurricane Flooding Impacts

While flooding would be likely, the site is protected from wave action by surrounding upland areas.

13. Freshwater Flooding Impacts

Impacts from freshwater flooding would be limited due to the site's remoteness from the San Jacinto River.

14. Stability

While subsidence has been a problem in the past, recent data suggest that the rate of subsidence has decreased to approximately 0.2 feet per 5 years in the eastern portions of Harris County. Prior data indicate that subsidence was approximately 0.4 feet per year in certain areas.

15. Ownership

The Texas Parks and Wildlife Department is the present owner of the site area.

16. Environmental

While the presence of threatened or endangered species and contaminants from past waste disposal practices is unlikely, the potential for nearby cultural resources is significant. The site is very near, if not within, the area where the Battle of San Jacinto took place.

2.9 Site VII

1. Distance to the San Jacinto River

Site VII lies adjacent to the San Jacinto River. Figure 20 shows the site and its surroundings.

2. Elevation

The topographic high for a potential wetlands configuration is 25 feet (MSL). Assuming 13 feet of overburden over approximately 22 acres, an estimated volume of 555,555 cubic yards of soil would require excavation.

3. Existing Land Use and Vegetation

The potential wetland area is covered by hardwoods. Dominant species likely include water oak, laurel oak, and red oak. The site appears to be used for recreation by nearby residents.

4. Adjacent Land Use and Vegetation

To the north and west of the site lies the San Jacinto River. South and east of the area are residential areas.

5. Soils

The two soil types which lie in the potential wetland configuration are the Bernard Urban Land Complex and the Vamont Urban Land Complex. The Bernard soil is clayey-to-silty loam. The pH ranges from 6.1 to 8.4. Permeability is low ranging from 0.06 to 2.0 inches per hour. The water table depth is from 0 to 2 feet. The water table depth is from 0 to 3 feet in depth. The Vamont is also a clayey to silty loam with a similar permeability. pH ranges from 4.5 to 7.8. The water table depth is from 0 to 2 feet in depth.

6. Total Property Area

Approximately 79 acres are available for configuring a wetlands area.

FIGURE 20
SITE VII
FRENCH LIMITED
NATURAL RESOURCE MITIGATION
PRELIMINARY SITE SELECTION ASSESSMENT

VIEW LOOKING TO THE SOUTH

7. Final Configuration

The potential configuration of the wetlands area follows the topographic contours, as shown in Figure 2. It would lie adjacent to Bird Lake and its associated wetlands.

8. Nearest Access

Access would be via residential streets or potentially by barge.

9. Mode of Access

The mode of access would be the above mentioned roads or via a barge, water depth permitting.

10. Distance to Soil Disposal Site

Arrangements for disposal of excavated soils are usually determined at the time of construction. As overburden is removed, it is transported directly to a construction site requiring fill material.

11. Distance to the FLTG Site

The approximate distance to the French Limited site is 10 miles.

12. Hurricane Flooding Impacts

While flooding would be likely, the site is protected from wave action by surrounding upland areas.

13. Freshwater Flooding Impacts

The site lies on the high energy side of the river. The potential for scouring during a flood event is high.

14. Stability

While subsidence has been a problem in the past, recent data suggest that the rate of subsidence has decreased to approximately 0.2 feet per five years in the eastern portions of Harris County.

Prior data indicate that subsidence was approximately 0.4 feet per year in certain areas.

15. Ownership

The site is currently owned by multiple private owners.

16. Environmental

At this time, no known threatened or endangered species, cultural resources, or contaminants from past waste disposal practices are present at the site.

3.0 SITE EVALUATIONS

Several of the sites selected are suitable for wetlands creation. The following evaluations outline the limitations and benefits of each site.

Site I is a potentially preferred site.

- Creation of additional area will increase the value of the existing wetland area. The topography is conducive to wetlands creation because it is within an intermittent creek drainage. The removal of existing vegetation will not cause a loss of significant habitat. Soils are conducive for wetlands establishment, being silty to sandy loams. Adjacent land uses in their present state would complement the wetland habitat.

- Potential limitations for this site are accessibility, acquisition, and maintenance of hydrologic requirements. The site is presently accessible via a private road. Acquisition may be difficult due to multiple landowners. To access the site, the road may require acquisition. Depending on hydrologic requirements, the area downstream may require acquisition or control to avoid construction of drainage canals or impediments which could drain or flood the wetlands area. Tidal connection to the river will need verification.

Site IIa shown in Figures 1, 2, 6 and 7 is not a preferred site. It is topographically high and is covered by dense pine deciduous forest. It also lies on the high energy bank of the river predisposing it to scouring during flood events. These factors alone deem the site unsuitable for wetlands habitat creation.

Site IIbN, while having conducive attributes, lacks complementing adjacent land usage and is limited in size. The existing use of this site may be for emergency spill containment which would preclude it from selection.

Site IIbS is vegetated by pine and deciduous trees. Removal would eliminate a habitat type of moderate value. The long open stretch of water to the south would promote erosion by wave action, especially during storm events.

Site III lies in suitable area for wetlands creation. The site is benefited by a significant access road. The soils, sandy to silty loams, are conducive for the establishment of wetland plants. The site is adjacent to existing wetlands and near a major wetlands area (George White Lake).

- The existing vegetation is not indicative of high quality habitat. Acquisition of the area would prevent potential urban and industrial development and add to existing wetlands habitat acreage.

- Characteristics of the site not conducive to wetland establishment are its proximity to a nearby residential area. Public access to the wetlands may be difficult to control during flora establishment.

- The site may also be affected by storm events. The open stretch of water to the south may allow wave action to adversely affect establishment.

Site V is the old Brownwood Subdivision of the City of Baytown.

- The site is topographically low and lies adjacent to three estuarine bays. The City of Baytown may be amenable to a cooperative arrangement for park and

habitat establishment. Limited excavation of soils would be required. Concrete could serve as breakwater material along the shoreline.

- Some potential limitations include documented occurrences of archeological sites along the shoreline. These sites, however, may now be submerged and may not be impacted by construction activities within the peninsula. Removal and disposal of houses and materials would be required. The foundations and driveways would also be required, but could be used on site. Access control may be required to prevent disturbance from the public during vegetation establishment.

Site VIa is a suitable area for wetland habitat creation.

- Some advantages of the site are its low topography, adjacent wetlands, ease of controlling public access, and proximity to existing wetlands.

- Limitations of the site include ownership, erosion by wave action from traffic in the Houston Ship Channel, proximity to the site of the Battle of San Jacinto, and one recorded location of archeological significance.

Site VIb is currently owned by the Texas Department of Parks and Wildlife. It is covered by bottomland hardwood tree species, a significant habitat type in this area. The slopes are relatively steep and erosion could be problematic.

Site VII is covered by dense pine deciduous forest. While this habitat type is common in the region, it provides habitat for a wide range of wildlife species. The slopes at the site are rather steep and are conducive to sedimentation and erosion.

Access is limited to residential streets. The stability of the site may be limited because it is on the high energy side of the river.

4.0 REFERENCES

Kadlec, J.A. and W. A. Wentz. 1974. State-of-the-Art survey and evaluation of marsh plant establishment techniques: induced and natural. Volume 1: Report of Research. Dredge Material Research Program. U.S. Army Corps of Engineers Contract Report D-74-9.

Wheeler, Frankie F. 1976. Soil Survey of Harris County, Texas. U.S. Department of Agriculture. Soil Conservation Service.

Cain, Brian. 1989. Personal conversation with ENSR biologist Jarrett Woodrow regarding the occurrence of threatened or endangered species at potential sites. U.S. Fish and Wildlife Ecological Services branch. Clear Lake, Texas.

Spock, C. 1989. Letter of preliminary assessment of documented cultural resource sites for prospective wetland sites. Head of Records. Texas Archeological Research Laboratory University of Texas at Austin.

Gabrysch, R. K. 1989. Personal communication with ENSR biologist Jarrett Woodrow regarding the rate of subsidence in eastern Harris County. U.S. Geological Survey. Houston, Texas.

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